

insulin regularly if this happens. I hope that doctors all over the world will help to persuade the Vietnamese government to free a heroic colleague before it is too late.

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## Keeping babies in prison

EDITOR,—Luisa Dillner's editorial on keeping babies in prison is a welcome reminder of one of the greatest inhumanities towards children in the United Kingdom today.<sup>1</sup> The Children Act emphasises the rights of children and the importance of promoting their upbringing within their families,<sup>2</sup> yet our judicial system seems to take the opposite view.

We are not surprised that infants brought up in prison did not show significant developmental delay on Griffiths developmental testing as this scale was not designed to measure the "harmful" effects of an inadequate social and emotional environment. An assessment of play and social interaction in these very young children would be much more informative.

The few children who are allowed to spend their early months in prison with their mothers are at least spared sudden enforced separation, often with fostering and always with totally inadequate visiting arrangements. Dillner did not mention the thousands of children whose fathers are in prison, many of whom are rendered in need by social and economic consequences. How does a child maintain a positive relationship with a parent in prison? Why do we continue to punish children in this way? More consideration should be given to non-custodial sentencing for non-violent offenders who do not pose a threat to children (as in the Nordic countries and increasingly in other European countries such as Italy) and to developing the provision of quality child care both in and out of prison.

A humane society is one that cares for its children. The British Association for Community Child Health is a subspecialty group of the British Paediatric Association; we believe that the decision to separate children from their parents is rarely justified and that the rights of the children should always be paramount.

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1 Dillner L. Keeping babies in prison. *BMJ* 1992;304:932-3. (11 April.)

2 *Children act*. London: HMSO, 1991.

## Predicting psychiatric admission rates

EDITOR,—Brian Jarman and colleagues report high correlations between psychiatric admission rates and indices of local socioeconomic deprivation.<sup>1</sup> We recently analysed data on the use of psychiatric services obtained from case registers in two areas in northern Italy, urban south Verona and rural Portogruaro, for 1983-9. In south Verona we, like Jarman and colleagues in their study, found high correlations between the all diagnoses psychiatric admission rates and the following census variables: living alone, unemployment, percentage of the total population who are dependants, and percentage who are divorced, separated, or widowed. These correlations were higher for schizophrenic patients than for all admissions ( $r^2$  for best stepwise multiple regression model 0.94 and 0.79 respectively).

We suspect, however, that such a model may have important limitations. In rural Portogruaro, for example, there were no consistent associations between census variables and use of services. Furthermore, when we analysed only those admissions with a diagnosis of neurosis (ICD ninth revision) no significant correlations were found. Further research should perhaps look specifically at whether such correlations are found only in urban areas and only for psychotic, especially schizophrenic, patients.

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1 Jarman B, Hirsch S, White P, Driscoll R. Predicting psychiatric admission rates. *BMJ* 1992;304:1146-51. (2 May.)

## Decision analysis in medicine

EDITOR,—Although many doctors consider formal decision theory<sup>1</sup> to have little practical application, decision making is so central to the practice of medicine that all help is welcome. As part of an examination of a recent technical innovation (thrombolytic treatment for myocardial infarction) and the development of appropriate policy options we sought help from decision analysis. We constructed a decision tree, using a combination of national, international, and local data, to estimate the probabilities of the various outcomes. We applied a range of utilities reflecting possible preferences of patients, and the various options available were substantially clarified. Three points, however, arose from our studies, two prompting caution and one enthusiasm.

Firstly, the quality of the available data needed to complete these models is generally poor. We need much more fairly simple local information about the processes and outcomes of everyday activities such as, for example, what actually happens when a patient arrives at the front door of an accident and emergency department. One of us has tried, recently, to provide an example.<sup>2</sup> Secondly, gazing at decision trees has a bemusing effect: they can be taken to mean much more than their essentially crude weightings can tell us. Finally, doctors have talked a lot about the ways in which they can achieve true participation with patients in their health care. Here at last is a good place to start. Utilities can describe patients' hopes, fears, attitudes, understanding, and imperatives: doctors should begin to use them.

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1 Thornton JG, Lilford RJ, Johnson N. Decision analysis in medicine. *BMJ* 1992;304:1099-103. (25 April.)

2 Hendra TJ, Marshall AM. Increased prescription of thrombolytic treatment to elderly patients with suspected acute myocardial infarction associated with audit. *BMJ* 1992;304:423-6. (15 February.)

EDITOR,—Two aspects of J G Thornton and colleagues' article on decision analysis in undergraduate medical training require comment.<sup>1</sup> The first is the decision analytical model adopted. Expected utility derives from econometric models of rational decision making in riskless situations using complete information. This does not reflect what happens in real life, when many complex medical decisions are made in risky situations with incomplete information. Subjective expected utility is an axiomatic utility analysis that can be

used in risky situations where complete information is not available.<sup>2,3</sup> It has been used extensively to model human choice and decision making and is more appropriate in medical decision making.

My second comment concerns the acceptability of axiomatic decision making by patients. This cannot be justified by stating that "most people do agree that this is how they wish to make decisions." Rather, the test should be whether or not people make decisions that are consistent with the axioms of subjective expected utility. The research evidence is clear: they do not.<sup>3</sup>

Eraker and Politser reviewed the evidence on how decisions were reached between physicians and patients in the context of decision analysis.<sup>4</sup> They concluded that decision analysis had the advantage of being "explicit, quantitative and prescriptive" but there was "a large body of empirically based research in behavioural decision theory [which] indicates that there are many potential biases and distortions that could affect any recommendation based exclusively on decision analysis."

Those working in clinical medicine can cite instances of the gulf that can exist between what people say they want and how they behave. It is salutary to recall such instances. Otherwise we may be becoming more "explicit, quantitative and prescriptive" on the basis of a false assumption: that people are rational about health care decisions.

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1 Thornton JG, Lilford RJ, Johnson N. Decision analysis in medicine. *BMJ* 1992;304:1099-103. (25 April.)

2 Edwards W. The theory of decision making. *Psychol Bull* 1954;51:380-417.

3 Wright G. *Behavioural decision theory: an introduction*. Harmondsworth: Penguin, 1984.

4 Eraker SA, Politser P. How decisions are reached: physician and patient. *Ann Intern Med* 1982;97:262-8.

EDITOR,—The type of classic decision analysis described by J C Thornton and colleagues<sup>1</sup> has been an important development in the history of decision support systems. We believe, however, that there are compelling reasons why these systems have not been extensively used in a clinical setting.

Classic decision analysis may be very useful in resource allocation exercises on precisely defined problems, such as amniocentesis for prenatal diagnosis, where all outcomes are known at the beginning of the exercise. Probabilities can be determined accurately from published work and the value of each outcome can be estimated with some precision. Real clinical problems are seldom so simple and the variety of outcomes of the action is often not apparent at the start of the analysis. It is often necessary to introduce new options as the case develops and new information is acquired. There are major problems in calculating accurately what each outcome is worth to the patient; without this information the system cannot function. The authors allude to this problem in their paper.

The alternative approach is to use logical and qualitative techniques to represent and to reason with medical knowledge. These techniques offer a more flexible approach than simple numerical methods. Effective decision making is not dependent on the availability of precise numbers; achieving a proper understanding of the logical structure of the decision is more important.<sup>2</sup> The Oxford System of Medicine is a computer program which provides this type of more general reasoning and is also able to reason with numbers when appropriate. The system generates arguments for and against different decision options by logical inference from facts in a knowledge base. The arguments are considered and the logically correct decision options are presented. It is possible to examine the facts that were used to make the decision